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ABSTRACT

In technical writing classes writing can come alive to students, because in such classes students are knowledgeable about their subjects and can simulate writing to real audiences in business and industry rather than only to teachers. Students practice writing within determined and specified formats and to a standard style in response to problematic situations within an organizational hierarchy. Such "real world" writing demands much of both student and instructor, so that the teaching of invention is required accompanied by practical strategies for idea generation to restore an explicit concern with thinking to the teaching of writing. Inventional activities should not only provide the writer material with which to write and a way to write about it, but also promote writing that is clearer and more coherent because of the practice of invention. In real circumstances, inventional strategies will be recast to a form that meets a writer's needs. The student is given a full set of inventional strategies within a full rhetorical frame to give them meaning, and this provides her or him with a systematic method of using language as a means of inquiry. (DF)

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INVENTION IN TECHNICAL WRITING

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TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) AND USERS OF THE ERIC SYSTEM."

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I can think of no better way to make the technical writing class come alive than to make it real. And no other writing class has quite the same opportunity for making writing the reality, the dimension of human experience that it really is. Writing is writing, and one can say that there are certain qualities which characterize writing no matter what the genre; but there are distinguishing features that set apart the technical writing class from other, less ambitious and more generalized classes in writing, and make it more likely to come alive. In a technical writing class, for example, students at last have something to say or at least are knowledgeable about how to locate material within their field of specialization. They are freed somewhat from the sheer pressure of generating information to be able to consider the way in which something is said. In a technical writing class, students can simulate writing to real audiences--audiences in business and industry, audiences of any professional affiliation, most importantly, audiences other than a teacher. They can practice writing within determined, specified formats, and to the standard of a preferred style. They can write in response to problematic situations, and within an organizational hierarchy. In a technical writing class, in short, students can study and practice writing with all the complications and constraints that impinge on it, all the varieties of control which must be exercised as soon as writing passes out of the classroom and into the world of work.

The aim of my paper is to explore the problem this poses to the teaching of writing. For if, in a technical writing class, writing is to pass beyond exercises in composition to simulate writing in response to real problems within real contexts and to real audiences, a student has all that much more to deal with. "Real world writing," so to speak, demands a great deal of a student, and if classroom instruction is to keep pace, it will need, of course, to account for the more complex task. Because of its emphasis on writing in a professional context, technical writing has the capacity to treat composition with a concrete, job-setting relevance to students. But this real-world setting invites a no-

holds-barred, full-fledged pedagogical treatment of writing in its real-world cycle of problematic origins, systematic investigation, writing and rewriting, revising, and, eventually, its reading. The technical writing class has the opportunity, perhaps even the obligation, to address this rhetorical situation entire.

The teaching of invention, I will argue, is one way of making the means of technical writing classes--the content and strategies they teach, congruent with their aims. Invention treats content--the substance of writing. In a course whose scope is nothing short of the whole thing--the full range of rhetoric, the range claimed by the realistic, practical orientation of technical writing, thinking must be viewed as a dimension of writing. The study of invention, accompanied by practical strategies for idea generation, can restore an explicit concern with thinking to the teaching of writing. Without such a component in a technical writing class, I doubt that students are being taught what they need in order to accomplish what we ask them to do.

I.

In a recent article, Richard Young discusses the characteristics of the "current-traditional paradigm," a "system of widely shared values, beliefs and methods" which, he argues, has informed the teaching of composition for several decades.[1] This paradigm, or "stable system of beliefs," is revealing both for what it includes and what it excludes. Among its salient features are an "emphasis on the composed product rather than the composing process; the analysis of discourse into words, sentences, and paragraphs; the classification of discourse into description, narration, exposition, and argument; the strong concern with usage... and with style..."[2] In brief, the current-traditional rhetoric is oriented to the analysis, classification and manipulation of written texts; in Young's words, it tends to become a "critical study of the products of composing

and an art of editing."[3] Conspicuously absent from the paradigm (and hence from the classroom teaching of composition) is any explicit attention to the composing process, including--or rather, also excluding--the skills cultivated in invention.

The beliefs comprising this paradigm can be treated as historical phenomena. By this view, the current emphases in writing classes are, in a sense, historical accidents, topics which are the legacy of earlier thinking about writing--thinking which may or may not still have currency. The omission of invention from present classroom practice, for example, may be explained, at least in part, by nineteenth century vitalist assumptions that creativity cannot be affected by teaching.[4] On the other hand, the components of the current-traditional paradigm can, and I believe do, generate certain consequences to the teaching of writing which have no necessary connection with their historical origins. The strong emphasis in the paradigm on teaching formal aspects of the text, for example, carries with it certain implications about the nature of language and language use. For although a composition class is ostensibly about writing, writing is a mode of language use; and what is and isn't taught in a writing class suggests a compatible model of discourse, a theory of language use which would justify the inclusion of certain topics in a writing course and the exclusion of others. The language model implied by the current-traditional paradigm, I would like to suggest, treats form and content in isolation from each other, as evidenced by the paradigm's attention to the analysis of written texts and its exclusion of topics treating writing as a process or a generative activity. The paradigm suggests that writing can be taught without reference to thinking, and that the text can be studied without reference to a creating or reading intelligence. In short, the active participation of the human mind in the writing or reading of a text is slighted or ignored.

Given the aims of the technical writing class as articulated earlier--the teaching of language use as it is congruent with our experience, and with actual

practice in professional situations, the components of the current-traditional paradigm would seem to be inadequate. We ask students, after all, to write, and not merely to edit. And in asking them to write, we ask them to write about something. But in a pedagogy where content is separated from form, where thinking is ignored as a dimension of writing, there is no instruction in the skills relevant to this aboutness which is always a dimension of discourse. The separation of form from content is, in analysis, a necessary distinction; we could not have grammars, for example, without it. But it is a purely analytical distinction, and alien to our experience of language. Language in experience always exists as an undifferentiated mingling of form and content. In its function as communication, for example, it is like a pipe or tube, channelling a flow of ideas, and joining two otherwise separate minds. In use, like a pipe, it has a material existence. It is audible in speech, and visible as writing. Unlike a pipe or tube, however, language has no actual existence when it is not in use. Discourse does not retain a material form whether or not it is fulfilling its channelling function. Words on a page, however material may be their appearance, are not language until someone reads them. Language does not have the power of reference, nor an audience, nor an origin apart from the human thinking that informs it. Language use does not occur except as a frame for thinking; or, shifting our weight to the other direction, thinking makes language use possible. Discourse, then, is organic, and thinking and knowing cannot well be separated from writing.

Chomsky's distinction between competence and performance, along with Ferdinand de Saussure's similar pair of terms, langue and parole, is relevant to this issue. Each set of terms distinguishes between language potential--in Chomsky, competence, in Saussure, langue--and language act or use. Chomsky calls this speech- or language-act phenomenon performance; Saussure called it parole. A writing class, as opposed, say, to a course in grammar, is directed to performance

or parole--the active use of language, rather than the potential for language use. That is, a writing class addresses something more than language capacity. Writing involves a human, animating principle; it involves thinking. And such a view of language use stands as a critique to the view of language implied by the current-traditional paradigm. For the implication of adopting such a view of language in relation to writing--what Emile Benveniste calls a linguistics of discourse rather than a linguistics of language, will be that thinking--discovering something to say along with saying it--becomes a necessary aspect of a course in composition. If living language--language as it is congruent with our experience, is the counterpart of a paradigm for rhetoric, we will need to address the skills cultivated by invention. That is, if the instruction offered the student is to be congruent with what the student is asked to do; if the aims of the writing class are to be matched by the means offered the student for achieving those aims; invention must be reintroduced to the discipline of writing.

II.

Now discourse, we have already established, is a composite. As it is written or read, it is invested with both meaning and constructive, formal qualities. On one hand, it is an embodiment of thinking; on the other, it is a formal structure. Meaning and physical construct are inseparably blended in discourse. If invention is to do something about thinking--not in terms of thinking proper, which of course is invisible and beyond our reach, but is to treat thinking in light of language use, or writing, it will have to occupy some middle ground between the two. And indeed, this middle ground--the "hinge," one might say, between thinking and discourse--is the traditional territory of invention. Invention, as a component of rhetoric, inhabits a point somewhere between invisible, silent thought and fleshed out, visible or audible language. Like the distinction between form and content, this point of intersection between thought and language is a purely

analytical region; it has no real counterpart in our experience. It provides us, however, with a way to talk and do something about the skills addressed by invention. And it provides us with the primary tools employed in inventional strategies--the "common" topics, or heuristics for idea generation.

To the extent that invention has a subject matter, it is the topics themselves. The topics, or "transcendentals," are at once the tools employed in inventional strategies and the core of inventional theory. They can be distinguished into two varieties of topics--we might call them categories of categories--which represent the complementary "poles" of inventional activity. That is, they are allied to the composing process and lead to either of the primary structural components of written texts--to a thesis, or overall assertion about a subject; or to the argument or explanation which supports this thesis. William F. Irmscher's adaptation of Kenneth Burke's pentad is an example of a thesis-oriented set of topics[5]; and Joseph Williams' inventional matrix in The New English[6], or the Young, Becker and Pike tagmemic matrix in Rhetoric: Discovery and Change[7] are examples of primarily argument-oriented sets of topics. Both are varieties of "common" topics, as opposed to the so-called "special topics"; they catalogue the basic linguistic operations or range of organizational choices available to a writer as he works within the constraints of language. Such topics are "common" in the sense that they are not subject matter- or method-specific, but are used in any writing on any subject. Special topics, on the other hand, are the concern of specific subject areas or methods. When the common topics are considered as a catalogue, they represent the range of primary perspectival choices available to us in approaching a subject. In writing or language use, however, they become operations, actual processes of thought--ways of relating things. Overall, they mark the conditions for language use--both the available options and the necessary choices to be made in order to produce discourse.

Topics alone, of course, do not constitute invention. In fact, by themselves,

they probably have no inventional value. It is only when they are used, when they become instrumental within a strategy for invention, that they acquire heuristic value. A set of topics (either a thesis- or argument-oriented set) is a device for systematic investigation. Used as a methodical means of varying perspective, either variety of heuristic device should exhaust a writer's resources in regard to a subject. For, as was explained earlier, common topics catalogue a basic range of options, a totality of possible approaches to a subject. Systematic variation of perspective is thus a kind of mental gymnastic. It encourages thoroughness in investigation. No stones--that one is aware of, anyway--are left unturned. And along with generating an abundance of material for use in writing, systematic investigation enhances the probability of a new insight into a problem. It encourages creativity.

The two varieties of heuristic, the thesis- and argument-oriented clusters of topics, can be made to play off one another in a kind of simulation of text-building (as indeed they do play off one another, operationally, in the composing of a text). Each stance--a topic assertion and an argument--makes possible the further refinement of the position taken in the other as new material is discovered, in a kind of dialectical movement toward increased understanding of a subject. This interplay between thesis and argument, between topic and comment, suggests that a methodical investigation employing complementary sets of topics actually parallels the composing process itself. It aims not merely at randomly generating a profusion of information, but at advancing a thesis and testing it informally.

In practical, applied terms, here's how it works. A student will, in preparing to write, pick or be given a subject with which to work--a mechanism, for instance. Using Joseph Williams' explanation-oriented matrix of common topics, the student might "explore" his subject by making necessary decisions about his approach to it. If he is writing a mechanism description, for example, he will assume an internal rather than an external perspective on his subject.

That is, he will write about the internal composition of the mechanism itself rather than about the relationship of the mechanism to something in its environment. He also will enumerate and relate the components of the mechanism as functional, physical parts, rather than classifying them from another perspective. In the categories of the Williams matrix of topics, then, he will choose an internal perspective over an external one; a discussion by part rather than kind; and will, unless the mechanism is to be described in motion, present the subject as a static object. The mechanism will be treated out of time, so to speak. At this point the decisions necessary to an argument-oriented set of topics such as Williams' have been made. It remains, however, for the student to sufficiently investigate his subject to be able to "fill in the blanks"--to actually discover the organization and arrangement and appearance and function of the parts of his mechanism.

Concurrently, the containing thesis statement must be articulated. A student will need to decide the relationships of his subject's significant components in order to state what the discussion is <u>about</u>; that is, what is explained or supported. Using the Irmscher heuristic mentioned earlier, for instance, if the student can answer specified questions--questions of who or what is the actor or agent involved; what is the action, scene, means and purpose; and how these are interrelated, he can assert a thesis.

Such decisions as these--decisions of perspective and relationship, will direct a writer's investigation of his subject; they provide a point of departure. But in the course of working with both sets of topics, the information generated by one may suggest a revision to the stance assumed in the other. Detail derived from systematic exploration using the argument-oriented heuristic may, for example, reveal a weakness in the working thesis. Or an altered thesis statement may suggest a change in the direction of the argument. And so the play between thesis and argument, argument and thesis will progressively refine a writer's understanding of his subject. One could say that in invention he is discovering the "structure"

of his subject insofar as he is coming to view it compositionally. For when a writer understands his subject sufficiently well, he can articulate it in the frame of a composition. It becomes something about which an assertion can be made and supported.

III.

The inclusion of invention in a rhetorical paradigm for teaching writing makes language available as a means of inquiry in a composition class. In invention, language is used not as an end in itself, but as a means to an end. It can be "harnessed," so to speak, as a tool for the discovery and development of ideas. Language is used, that is, as it is used in day-to-day experience--as a means of recognizing, articulating and solving problems, a use which in experience, however, is more often than not hit-and-miss. In invention, the use of language as an instrument for inquiry is rendered systematic. The topics, for instance, play on the "convertible" or two-directional quality of language--its tendency to either analysis or genesis--that is, to either the breaking up or "exploding" of a subject in investigation; or to synthesis, the knitting together of disparate parts into composed wholes. The topics also, as we have seen, coincide with the two primary structural dimensions of discourse, and can work in concert with each other in a dialectical movement toward understanding. The systematization, then, that gives inventional strategies their generative power is a methodical appropriation of "natural" aspects of language--events which occur regularly and without conscious effort, whenever we use language. These aspects of natural language--choices of perspective and relationship, assertions viewed within explanatory contexts, are made available for consciously directed use in circumstances where merely naive language use is insufficient. Inventional strategies, that is, are firmly gounded in a self-conscious--hence controlled, performance of the composing process, for use in situations where writers are asked to generate ideas and use language rhetorically (with purpose and skill within a complex of constraints).

One would hope that the benefits of invention would dovetail with the traditional-paradigm interest in the textual presentation of ideas--such qualities of texts as can be described by terms like "clarity" and "coherence." Empirical evidence would be necessary to demonstrate conclusively that inventional activities have a carryover to style, for example, but our discussion to this point would suggest that such a thesis has at least a theoretical justification. Our use of a discourse model of language as a companion to a paradigm for teaching writing reveals a constant process of composition embedded in language use. In discourse, language can never be merely text. An actively-construing human mind--either a writer or a reader, must animate a text in order to elevate it to the status of meaning something to someone. The means of understanding, we have said, can be explained compositionally as the dialectical interplay of assertion and validation, or thesis and support. There is, it appears from our investigation into the mechanisms of investigation, a close link between the idea of composition and the idea of understanding.

Understanding, of course, is not exclusive to composition-writing. Neither is composition exclusive to writing. Composition would appear to be a generalized process in which other modes of language use--reading, for instance, participate. Reading can so be viewed as a variant on a process of composition common to all modes of language use; it can be seen as a sequential discovery of detail and a progress toward perceiving the containing, hierarchical patterning of a text. In textual composition, on the other hand, the writer renders specific and sequential the progress of thought implicit in his already-arrived-at overview of a subject. His is a process of fleshing out a thesis rather than seeking it. Writing and reading, the two major, extra-textual concerns of a writing class, apparently share a process of composition. They work the ropes from opposite ends, but their underlying paradigm is the same. And it is apparent that, although we are talking about active language use, we are also talking about texts--that, much as topics

are codified operations, these assertion and validation, or paradigmatically- and syntagmatically-focused activities are operational analogues to the major structural aspects of a text. Thus a theory of reading is, for the purposes of a writing class, the counterpart of a theory of invention. That is, both invention and reading are searches after meaning within the constraints and possibilities of language.

It would appear that, since structural analogues exist between understanding and composing, clarity in writing--a quality of text which is not limited to sentences but comprehends larger relationships as well, can be seen as the counterpart of clarity in thinking. That is, a solid understanding is likely to result in clear, coherent prose. And such concepts as clarity and coherence can be seen as qualities of a writer's or reader's perception of relationships as well as aspects of a text. Inventional activities should not only provide the writer material with which to write, and a way to write about it; the writing itself--the text produced, should be more coherent and clearer for the practice of invention.

Technical writing, with its explicit orientation to the world of work, appropriates invention out of sheer scope; the complexity of the writing task it addresses will not be fully addressed, it seems, without an analytical, generative component in writing instruction. At the same time, its goal of verisimilitude, the simulation of actual writing problems and contexts and audiences, suggests that a too-literal, prescriptive view of inventional strategies will limit their usefulness. Heuristic techniques for investigation have their value, as do any other strategies taught in a writing class, insofar as they work. Effective writing is what counts, rather than a skilled performance of individual strategies within the writing process. In by far the majority of job-setting circumstances where writing is required, either time constraints won't allow, or the familiarity of the task won't require a full-blown, step-by-step systematic investigation. In real rather than idealized circumstances, inventional strategies, like all

other heuristics for writing, will be recast to a form that meets the writer's needs. As taught in a writing class, strategies for invention are fully elaborated versions of what a skilled writer will do selectively, rapidly and in his own style as he writes.

There will be times, however, when an investigation employing a full complement of strategies will be warranted. In preparation for such times, and for the many modifications of them that occur in "real life writing," a student needs to be taught a full set of inventional strategies, within a full rhetorical frame to give them meaning. A student will thus be provided with a systematic method for using language as a means of inquiry, a method which is a way of making the writing class realistically instrumental to students whose need is to write, not merely edit, and who, in order to write, need something to write about.

NOTES

[1]Richard Young, "Paradigms and Problems: Needed Research in Rhetorical Invention," in Research on Composing, edited by Lee Odell and Charles Cooper (Urbana, Illinois: National Council of Teachers of English, forthcoming).

[2]Ibid.

[3]Ibid.

[4]Ibid.

[5]William F. Irmscher, The Holt Guide to English, 2nd ed. (New York: Holt, Rinehart and Winston, 1976), pp. 29-48.

[6]Joseph M. Williams, The New English (New York: The Free Press, 1970), pp. 166-205.

[7]Richard E. Young, Alton L. Becker and Kenneth L. Pike, Rhetoric: Discovery and Change (New York: Harcourt, Brace and Jovanovich, 1970), pp. 119-153.